CLAIMS

1. A composite nanoparticle comprising a metal component as a core, and an organic substance surrounding the metal component and bonded to the metal component by physical adsorption.

2. A composite nanoparticle comprising a metal component as a core, and an organic substance surrounding the metal component and having a thermal separation initiation temperature of not less than 140°C and less than 190°C.

3. A composite nanoparticle comprising a metal component as a core, and an organic substance surrounding the metal component and having a separation energy of not more than 0.3eV per metal atom.

4. The composite nanoparticle according to any one of claims 1 to 3, wherein the organic substance consists only of carbon, hydrogen and oxygen.

5. The composite nanoparticle according to any one of claims 1 to 3, wherein the metal component comprises at least one of Cu, Ag, Pt, Pd, Ni, Au, Ru, and Rh.

6. The composite nanoparticle according to any one of claims 1 to 3, wherein the content of the metal component is 50 to 99% by weight of the total.

7. The composite nanoparticle according to any one of claims 1 to 3, wherein the average particle diameter of the core is 1 to 100 nm.

8. A composite nanoparticle comprising a core and a coating of an organic substance bonded to the core by physical adsorption, said core comprising at least an inorganic metal compound.

9. The composite nanoparticle according to claim 8, wherein the organic substance consists only of carbon, hydrogen and oxygen.

10. The composite nanoparticle according to claim 8, wherein the inorganic metal compound is an inorganic compound of a metal comprising at least one of Cu, Ag, Pt, Pd, Ni, Au, Ru, and Rh.

11. The composite nanoparticle according to claim 8, wherein the content of the metal component is 50 to 99% by weight of the total.

12. The composite nanoparticle according to claim 8, wherein the average particle diameter of the core is 1 to 100 nm.

13. A method for producing composite nanoparticles comprising:

allowing an inorganic metal salt and an organic material to coexist; and

heating the inorganic metal salt and the organic material to a predetermined temperature and holding them at the temperature for a predetermined time so that the inorganic metal salt is decomposed to produce metal nanoparticles and an organic substance is bonded to the metal nanoparticles by physical adsorption without forming an organometallic compound through a reaction between the metal nanoparticles and the organic substance.

14. A method for producing composite nanoparticles comprising:

allowing an inorganic metal salt and an organic material to coexist; and

heating the inorganic metal salt and the organic material to a predetermined temperature and holding them at the temperature for a predetermined time so that an organic substance is bonded by physical adsorption to cores, comprising an inorganic metal compound produced from the inorganic metal salt or through thermal decomposition of the inorganic metal salt, without forming an organometallic compound through a reaction between the organic substance and at least part of the inorganic metal salt.

15. The method for producing composite nanoparticles according to claim 13 or 14, wherein the following formula (1) holds true, with T (°C) representing the heating temperature of the inorganic metal salt and the organic material and t (h) representing the holding time at the temperature:

$$(T + 273)\ (20 + \log t) \times 10^{-3} \leqq 7.98 \qquad (1)$$

16. The method for producing composite nanoparticles according to claim 13 or 14, wherein the inorganic metal salt is silver carbonate and the organic material is a higher alcohol.

17. The method for producing composite nanoparticles according to claim 16, wherein the higher alcohol is myristyl alcohol and the heating temperature is not less than 70°C and less than 140°C.

18. A composite nanoparticle produced by allowing an inorganic metal salt and an organic material to coexist, and heating and holding them in such a manner that the following formula (2) holds true, with T (°C) representing the heating temperature and t (h) representing the holding time at that temperature:

$$(T + 273)\ (20 + \log t) \times 10^{-3} \leqq 7.98 \qquad (2)$$

19. The composite nanoparticle according to claim 18, wherein the inorganic metal salt is silver carbonate and the organic material is a higher alcohol.

20. The composite nanoparticle according to claim 19, wherein the higher alcohol is myristyl alcohol and the heating temperature is not less than 70°C and less than 140°C.